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Transplacental Effects of Nitrosocompounds in Inbred Strains of Mice and Rabbits.

The objectives of this investigation are to analyze the transplacental embryotoxic, teratogenic, and carcinogenic effects of two classes of nitrosocompounds, nitrosoureas and nitrosamines, in inbred strains of mice and rabbits. Obviously, these studies are complex, and some narrowing of aims is necessary. Thus, they propose to evaluate the action of the compounds with respect to: (1) their retention, activation (conversion), and degradation; (2) the role of fetal age or gestational days; and (3) the mode of inheritance and number of genetic loci involved in species and strain differences. They feel that detailed definition of these goals is pertinent to the situation in man because (1) malformations, congenital tumors and childhood cancers may have been transplacentally induced; and (2) at least certain types of tumors in adults may be due in part to delayed consequences of carcinogen-exposure during intrauterine life.

Strains of mice chosen for study are: AKR/J, DBA/2J, SWR/J, C57BL/6J, and C57L/J; they differ from one another by genetic origin (except for the last two), type C RNA tumor virus expression, inducibility of aryl hydrocarbon hydroxylase (AHH), and sensitivity to 1-ethyl-1-nitrosourea (ENU)-induced teratogenicity and carcinogenicity among other traits. For studies with rabbits they are primarily focusing on strains III and WH because of their differences in genetic origin and AHH inducibility.

Transplacental exposure is an extremely sensitive method for study of the biological effects of potentially harmful pollutants. Their effects depend upon hereditarily determined differences in susceptibility or resistance of pregnant mothers and embryos, and the stage of fetal (organ) development.

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